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influence. He would need to work in close cooperation with the proposed abattoir specialist. The Association should also investigate the possibility of using more local materials in the hides and skins industry. Thus local valonia or oak bark might be employed for tanning and locally refined and sulphurated fish oils used in the leather industry. Efforts might also be made to procure better salt at reasonable prices from the government salt works at Fao and to organize more adequate local supplies of date syrup which small tanneries use as a glucose.

Casings

Most if not all the casings are obtained from the abattoirs in barrels. Initial cleaning and grading is usually done on the floor which is occasionally washed down with water. The casings examined appeared to be remarkably free of parasitic infection, particularly in the North. More hygienic casings could be produced under more efficient and comfortable working conditions if the work were raised from the floor to zinc-lined tables and improved drainage and piped water supplies were provided in the sections dealing with casings.

Other Improvements in Abattoirs

Many abattoir buildings are in need of repair, enlargement and alteration. Improvements such as an impervious floor, better drainage and water supplies can often be effected at small cost. At present abattoir offal is largely wasted even though the amount involved would warrant the installation of modern methods of converting it into glue, bone meal, blood meal, etc. In order to encourage more slaughtering at the government-supervised abattoirs, it might also be desirable to review the taxes assessed at the abattoir which encourage livestock owners to resort to illicit slaughter.

Wool

The wool collected from the various fat-tailed varieties of sheep makes a good carpet wool and a valuable export product. Little attention is given, however, to good shearing, perhaps because milk rather than wool is considered the main product of the flocks. Shearing is done with crude hand shears. Wool is frequently left on the head and neck region and around the root of

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Measures to Improve Productivity and Quality of Output

1. Improved Lighting, Noise Abatement and Temperature Control

Good lighting is important in reducing fatigue, improving the quality of work and increasing production. Light that glares has the same effect as too little illumination; in either circumstance workers tire easily and their efficiency is quickly lowered. In designing new industrial buildings care should be taken to avoid the direct rays of the sun and to arrange wherever possible for the light to come from the north through the roof. In many existing plants, especially in the two-story buildings, the amount of artificial lighting needs to be increased.

Tests have also shown conclusively that a continuous high level of noise quickly brings fatigue and boredom. The resulting loss in productivity fully justifies taking whatever steps are feasible, such as the installation of sound-absorbing ceilings, to reduce the noise level to generally acceptable limits.

While the average temperature in Iraq is high, the humidity is quite low. This greatly simplifies the conditioning of air for comfort, it being necessary only to increase the humidity to decrease the temperature. This practice, known as "desert cooling," is now being adopted with considerable success and should be extended in those industries (especially textile mills) where it is of distinct advantage.

2. Improvements in Flow of Material

With the exception of the new textile mill, industrial plants are poorly arranged from the standpoint of material flow. Most buildings have two stories, requiring either stairs, conveyors or elevators to move material through the plant. Columns to support the upper floor interfere with operations on the lower floor. Such an arrangement requires duplicate handling of material and interferes with the use of modern equipment such as fork trucks. Similarly, the buildings which comprise a plant are frequently laid out without regard to the flow of materials from one to the other. There are, moreover, many cases of duplicate operations (for example, separate power plants). While it is difficult to correct existing conditions, the layout of any new plants should be

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arranged so that the material flows through the plant with a minimum of handling.

3. Use of Time Studies and Cost Accounting

Time studies are indispensable in some industries. In textile and machine shops, for example, these studies are essential to break down production costs for proper evaluation. To illustrate, a large costly lathe might show a greater return by speeding up its operation through the use of a different design of cutting tool, or a planer might show such a low return that its replacement by a milling machine would be fully justified. In textiles, time studies might show that it is actually more costly to have one operator tending five looms than to have him tend only four looms; or the reverse could be true, depending on all of the related factors. There are numerous other examples which could be cited to show the need of time studies in certain sectors of industry.

Cost accounting is very important to good operations and must be practiced before an industry can expect to reach maximum operating efficiency. Without it, many losses, which could easily be avoided, go unnoticed by management.

4. Improved Administration

At present there is very little delegation of responsibility by management to foremen and supervisors. This limits the economic size of plants and tends to complicate the work of management. There are good reasons for this situation, chiefly the widespread lack of education, experience and training, which has already been described. While the basic problem can be overcome only in time, industry can take steps to alleviate the immediate situation through such measures as on-the-job training programs suggested earlier, special courses for supervisory personnel, and better organization of inventories and distribution of stores of spare parts. The result should be an increase in production and, at the same time, a reduction in per-unit cost.

5. Greater Emphasis on Workers' Welfare

To hire and train a worker requires time and money, and the investment is lost if, because of sickness, the worker is unable to hold his job or to turn out a full day's work. A physical examination prior to hire would insure that a worker is physically